

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT



(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference WBH	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/GB 03/03949	International filing date (day/month/year) 11.09.2003	Priority date (day/month/year) 12.09.2002
International Patent Classification (IPC) or both national classification and IPC F04B49/06		
Applicant ARTEMIS INTELLIGENT POWER LIMITED et al.		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of 5 sheets, including this cover sheet. <input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of sheets.
3.	This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the opinion II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 08.03.2004	Date of completion of this report 03.09.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Pinna, S Telephone No. +49 89 2399-7912 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/GB 03/03949**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*):

Description, Pages

1-9 as originally filed

Claims, Numbers

1-10 as originally filed

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB 03/03949

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	1-10
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reference is made to the following document:

D1: EP-B-0 494 236 (UNIV EDINBURGH) 15 July 1992 (1992-07-15) cited in the application

1. D1 discloses a

fluid-working machine having a plurality of working chambers of cyclically changing volume, a high-pressure fluid manifold and a low-pressure fluid manifold, at least one valve linking each working chamber to each manifold, and electronic sequencing means for operating said valves in timed relationship with the changing volume of each chamber, wherein the electronic sequencing means is arranged to operate the valves of each chamber in one of an idling mode, and a full mode in which all of the usable volume of the chamber is used.

The subject-matter of claim 1 differs from this prior art (D1) in that it provides:

a partial mode in which only part of the usable volume of the chamber is used, and the electronic sequencing means is arranged to select the mode of each chamber on successive cycles so as to vary the time averaged effective flow rate of fluid through the machine, see document D1 and the corresponding passages cited in the search report, in particular col. 7 line 35- col. 7 line 40.

The distinguishing feature results in providing an output flow which is sum of full, partial and / or idling strokes.

The technical problem to be solved by the invention was therefore to reduce the quantisation error of the flow algorithm, especially at low flow levels.

The proposed solution is neither disclosed nor suggested by the prior art document D1 which discloses a fluid-working machine using all the usable volume of the working chamber.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB03/03949

Therefore the subject matter of claim 1 is both new and inventive.

2. The subject matter of claims 2-6 is considered new and inventive, since they concern particular embodiments of the fluid working machine defined in claim 1.
3. Claim 7 regards a method to operate a fluid working machine according to claim 1. For analogous reasons as at point 1 of the present International Preliminary Examination Report the subject matter of the above mentioned claim is new and inventive.
4. The subject matter of claims 8-10 is considered new and inventive, since they concern particular embodiments of the method defined in claim 7.
5. Independent claims 1 and 7 are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
6. The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).